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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,779	02/18/2004	Hirotaka Niiya	3693-50	1108

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EXAMINER	
CHEN, WEN YING PATTY	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 05/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/779,779	NIIYA, HIROTAKA	
	Examiner	Art Unit	
	W. Patty Chen	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/11/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Mar. 17, 2006 has been entered.

Response to Amendment

Applicant's Amendment filed Feb. 22, 2006 has been entered. Claims 1-15 remain pending in the current application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2, 5-7, 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (US 2002/0109811) in view of Ha et al. (US 2002/0113927).

With respect to claim 1 (Amended): Park et al. disclose in Figures 11A-11E a semi-transmissive display apparatus, in which a plurality of pixels, each including a transmissive region and a reflective region (as shown), are arranged in a matrix pattern, the apparatus comprising:

a device substrate (element 111) including, for each of the plurality of pixels, a transparent pixel electrode (element 157) provided in at least the transmissive region, a reflective plate (element 153) provided in the reflective region, and a switching device (element T);

a counter substrate including a common counter electrode (as shown in Figure 1 and described in Paragraph 0005) and opposing the device substrate; and a

a display layer interposed between the device substrate and the counter substrate (as shown in Figure 1 and described in Paragraph 0005),

an insulating layer (element 149) is provided over the switching device and extends to the transmissive region so as to be provided between the switching device and the reflective plate,

wherein no portion of the reflective plate extends below an upper surface of the insulating layer, and

wherein a thickness of all insulating material provided between the switching device and the reflective plate is substantially equal to a thickness of the insulating layer provided in the

transmissive region (as shown in the figure, wherein only one insulating layer, element 149, is provided between the reflective plate and the switching device).

Park et al. fail to disclose that the color filter layer is provided on the device substrate.

However, Ha et al. teach in Paragraph 0029 of forming color filter layer on the device substrate, between the reflective plate and the pixel electrode.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a semi-transmissive display apparatus as taught by Park et al. wherein a color filter layer is provided on the device substrate and disposed between the reflective plate and the pixel electrode as taught by Ha et al., since Ha et al. teach that such configuration of the device substrate allows the color filter layer to act as an insulating layer between the reflective plate and the pixel electrode so that bad influences due to a parasitic capacitance is not generated and further that misalignment between the color filter and the pixel electrode does not occur when assembling the two substrates (Paragraphs 0029-0030).

As to claim 2: Since Ha et al. disclose that the color filter layer is disposed between the reflective plate and the pixel electrode, therefore, the transparent electrode is provided closer to the display layer than the color filter so as to cover the color filter, whereas the reflective plate is provided farther away from the display layer than the color filter and the transparent electrode so as to cover the switching device.

As to claim 5: Park et al. further disclose in Figure 11E that the reflective plate (element 153) is electrically connected to neither the switching device (element T) nor the transparent electrode (element 157).

As to claim 6: Since Ha et al. disclose that the color filter layer is disposed between the reflective plate and the pixel electrode, therefore, the switching device is provided farther away from the display layer than the color filter; and Park et al. further disclose in Figures 11A-11E that the transparent electrode (element 157) is electrically connected to the switching device (element T) via a contact hole (element 150b) formed from the color filter (wherein as shown in Ha et al. Figure 7, the color filter, element 191, replaces the insulating layer, element 154, as disclosed by Park et al.).

As to claim 7: Park et al. further disclose in Figure 11E that the reflective plate (element 153) is electrically connected to neither the switching device (element T) nor the transparent electrode (element 157).

With respect to claim 11 (Amended): Park et al. disclose in Figure 5 a semi-transmissive display apparatus, in which a plurality of pixels, each including a transmissive region and a reflective region (as shown in the Figure), are arranged in a matrix pattern, the apparatus comprising:

a device substrate including, for each of the plurality of pixels, a transparent pixel electrode (element 19b) provided in at least the transmissive region, a reflective plate (element 19a) provided in the reflective region, and a switching device (element T);

a counter substrate including a common counter electrode (Figure 1, element 13) and opposing the device substrate;

a display layer (Figure 1, element 23) interposed between the device substrate and the counter substrate,

wherein the reflective plate covers the switching device along the profile of an upper surface of the switching device so that the profile of the reflective plate is substantially conformal to the profile of the upper surface of the switching device (as shown in the figure below, indicated by element P).

Park et al. fail to disclose that the color filter layer is provided on the device substrate.

However, Ha et al. teach in Paragraph 0029 of forming color filter layer on the device substrate, between the reflective plate and the pixel electrode, thus the transparent electrode is provided closer to the display layer than the color filter so as to cover the color filter, whereas the reflective plate is provided farther away from the display layer than the color filter and the transparent electrode.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a semi-transmissive display apparatus as taught by Park et al. wherein a color filter layer is provided on the device substrate and disposed between the reflective plate and the pixel electrode as taught by Ha et al., since Ha et al. teach that such configuration of the device substrate allows the color filter layer to act as an insulating layer between the reflective plate and the pixel electrode so that bad influences due to a parasitic capacitance is not generated and further that misalignment between the color filter and the pixel electrode does not occur when assembling the two substrates (Paragraphs 0029-0030).

As to claim 15: Since Ha et al. disclose that the color filter layer is disposed between the reflective plate and the pixel electrode, therefore, the switching device is provided farther away from the display layer than the color filter; and Park et al. further disclose in Figures 11A-11E that the transparent electrode (element 157) is electrically connected to the switching device

(element T) via a contact hole (element 150b) formed from the color filter (wherein as shown in Ha et al. Figure 7, the color filter, element 191, replaces the insulating layer, element 154, as disclosed by Park et al.).

Claims 3-4 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (US 2002/0109811) and Ha et al. (US 2002/0113927) in view of Ozawa et al. (US 2003/0076464).

Park et al. and Ha et al. disclose all of the limitations set forth in the previous claims but fail to disclose an interlayer insulating film provided between the color filter and the transparent electrode.

However, Ozawa et al. disclose in Figure 1C a display apparatus comprising an interlayer insulating film (element 6) made of a resin (Paragraph 0065, wherein the film is made of photoresist material, which is typically resin films) provided between the color filter (element 81) and the transparent electrode (element 11) so as to cover the reflective plate (element 4), and a thickness of the interlayer insulating film is determined so that a total optical path length for light traveling through the transmissive region is substantially equal to that for light traveling through the reflective region (Paragraphs 0065 and 0069).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a semi-transmissive display apparatus as taught by Park et al. and Ha et al. wherein an interlayer insulating film is provided between the color filter and the transparent electrode as taught by Ozawa et al., since Ozawa et al. teach that the thickness adjusting interlayer insulating film helps to adjust the liquid crystal layer thickness between the

reflective and transmissive regions so that the contrast of the display is improved and thus achieves a high quality color display (Paragraph 0069).

Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (US 2002/0109811) in view of Ha et al. (US 2002/0113927) further in view of Ozawa et al. (US 2003/0076464).

With respect to claims 8 and 9 (Amended): Park et al. disclose in Figures 11A-11E a semi-transmissive display apparatus, in which a plurality of pixels, each including a transmissive region and a reflective region (as shown), are arranged in a matrix pattern, the apparatus comprising:

an active substrate (element 111) including, for each of the plurality of pixels, a transparent pixel electrode (element 157) provided in at least the transmissive region, a reflective plate (element 153) provided in the reflective region, and a transistor switching device (element T);

a counter substrate including a common counter electrode (as shown in Figure 1 and described in Paragraph 0005) and opposing the device substrate; and a

a display layer interposed between the device substrate and the counter substrate (as shown in Figure 1 and described in Paragraph 0005),

an insulating layer (element 149) is provided over at least a substantial part of the transistor switching device and extends to the transmissive region so as to be provided between the switching device and the reflective plate,

wherein no portion of the reflective plate extends below an upper surface of the insulating layer, and

wherein a thickness of all insulating material provided between the switching device and the reflective plate is substantially equal to a thickness of the insulating layer provided in the transmissive region (as shown in the figure, wherein only one insulating layer, element 149, is provided between the reflective plate and the switching device).

Park et al. fail to disclose that the color filter layer is provided on the active substrate in the reflective region and the transmissive region of the pixel and that an interlayer insulating film provided between the color filter and the transparent electrode in order to cause a thickness of the liquid crystal layer to be less in a substantial portion of the reflective region than in a substantial portion of the transmissive region.

However, Ha et al. teach in Paragraph 0029 of forming color filter layer on the device substrate, between the reflective plate and the pixel electrode and Ozawa et al. disclose in Figure 1C a display apparatus comprising an interlayer insulating film (element 6) made of a resin (Paragraph 0065, wherein the film is made of photoresist material, which is typically resin films) provided between the color filter (element 81) and the transparent electrode (element 11) so as to cover the reflective plate (element 4), and a thickness of the interlayer insulating film is determined so that a total optical path length for light traveling through the transmissive region is substantially equal to that for light traveling through the reflective region (Paragraphs 0065 and 0069).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a semi-transmissive display apparatus as taught by Park et al.

wherein a color filter layer is provided on the device substrate and disposed between the reflective plate and the pixel electrode as taught by Ha et al., since Ha et al. teach that such configuration of the device substrate allows the color filter layer to act as an insulating layer between the reflective plate and the pixel electrode so that bad influences due to a parasitic capacitance is not generated and further that misalignment between the color filter and the pixel electrode does not occur when assembling the two substrates (Paragraphs 0029-0030) and further to provide an interlayer insulating film between the color filter and the transparent electrode as taught by Ozawa et al., since Ozawa et al. teach that the thickness adjusting interlayer insulating film helps to adjust the liquid crystal layer thickness between the reflective and transmissive regions so that the contrast of the display is improved and thus achieves a high quality color display (Paragraph 0069).

As to claim 10 (Amended): Park et al. further disclose in Figure 11E that the reflector (element 153) is not electrically connected to the transistor (element T) and is not electrically connected to the transparent electrode (element 157).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (US 2002/0109811) and Ha et al. (US 2002/0113927) in view of Ha (US 6919945).

Park et al. and Ha et al. disclose all of the limitations set forth in the previous claims, but fail to disclose that the reflective plate is electrically connected to neither the switching device nor the transparent electrode.

However, Ha discloses in Figure 4 a display apparatus wherein the reflective plate (element 126) is electrically connected to neither the switching device (element T) nor the transparent electrode (element 130).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a semi-transmissive display apparatus as taught by Park et al. and Ha et al. wherein the reflective plate is electrically connected to neither the switching device nor the transparent electrode as taught by Ha, since Ha teaches that by having no voltage supplied to the reflective plate allows the reflective plate to be disposed and covering the switching device acting as a light shield film while not having electrical influence on the operation of the switching device (Column 2, lines 35-54).

Response to Arguments

Applicant's arguments with respect to all claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. Patty Chen whose telephone number is (571)272-8444. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

W. Patty Chen
Examiner
Art Unit 2871

WPC
5/17/06

ANDREW SCHECHTER
PRIMARY EXAMINER